REMARKS

In the Office Action, the drawings were objected to under 37 C.F.R. §1.83(a). Claims 2-4 and 8-10 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1-12 were rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over either Evans (U.S. Pat. No. 3,836,288) or Vogt (U.S. Pat. No. 3,260,285) or Holzenberger (U.S. Pat. No. 4,154,484) or Ogawa (JP 09071325).

Applicant would like to thank Examiner Hess for the consideration given applicant's attorney during the telephone interview of February 14, 2008. During the interview, the differences over the art and the claim language were discussed.

Amended claim 1 now recites that in the tubular chamber 11 of the device forming the subject-matter of the claimed invention there are communication means (detailed as an outlet hole 17 and an inlet hole 16) suitable to be made in communication, when appropriate, with a vacuum source and a pressure source.

The core of the present invention is to be seen in that, when the powder conveying device is operatively connected, the vacuum source and the pressure source communicate with the tubular chamber 11 through the respective outlet hole 17 and inlet hole 16 (i.e. the outlet hole 17 is designed to merely allow air to leave

the chamber 11 to create vacuum and the inlet hole 16 is designed to merely allow air to enter the chamber to create pressure) and in that said holes 16, 17 are distanced along the chamber axis with the inlet hole 16 located in proximity of the input valve 14 (i.e. on the opposite side of outlet 13) and the outlet hole 17 located in proximity of the output valve 15 (i.e. on the opposite side of inlet 12).

This arrangement, with the inlet hole 16 at the beginning of the chamber 11 and the outlet hole 17 at the end thereof, favors the suction and delivery of the powders entering and leaving the chamber through the input valve 14 and the output valve 15 respectively and does thereby optimize the suction and delivery phases (cf. page 5, lines 21-22 and page 7, lines 24-28 of the specification).

Ogawa discloses a device for conveying powders through pipelines where (Fig. 1, associated with the English abstract) a single, centrally arranged air port l_{ab} alternately connects, via pneumatic line x_l, the tubular chamber 6 either to a vacuum source 13 or to a pressure source 14. It is apparent that, since only one air port is provided, neither the feature requiring that the vacuum source and pressure source communicate with the chamber through an outlet hole and an inlet hole respectively, nor the feature requiring that the outlet hole and the inlet hole are arranged in axially distanced positions along the axis of the tubular chamber, with the outlet hole located in proximity of the output valve of the chamber and the inlet hole located in proximity

of the input valve of the chamber, can be considered anticipated or suggested by the arrangement illustrated in Fig. 1 of Ogawa, which substantially represents an example of the prior art disclosed on page 2, line 23 to page 3, line 2 of the present application.

Fig. 2 of Ogawa illustrates an alternative embodiment of the device of Fig. 1, wherein a further air port l_a is located in proximity of the input valve 4_{a1} of the chamber 6 to be connected (via line x_2 and unidirectional valve 17) to the pressure source 14. As in Fig. 2 of Ogawa there is no outlet hole destined to communicate only with the vacuum source 13 (in view of the air port l_{ab} being alternately connected either to vacuum source 13 or to pressure source 14), one of ordinary skill could not find in Fig. 2 of Ogawa any useful teaching or suggestion as to provide the tubular chamber with an outlet hole and an inlet hole, each being designed to communicate only with the vacuum source and with the pressure source respectively. On the other hand, as in Fig. 2 of Ogawa the hole that can be connected to the vacuum source 13 (thus acting as an outlet hole) is the centrally arranged air port l_{ab}, the feature of claim 1 as currently amended, requiring that the outlet hole is located in proximity of the output valve of the chamber, cannot be considered anticipated or suggested by the arrangement illustrated in Fig. 2 of Ogawa.

Fig. 6 of Ogawa illustrates a further alternative embodiment, wherein two additional air ports l_a are present, both connected to the pressure source 14 via

respective pneumatic lines x_2, $x_{2'}$ and unidirectional valves 17, one being located upstream of the central port l_{ab} and the other downstream of said central port l_{ab}. It is not clear from the English abstract of Ogawa the function and purpose of these additional air ports l_a. However, as an interspace 7 is present, which surrounds the filter element 31 along the length of tubular chamber 6, thereby providing a uniform longitudinal distribution of air inlet for pressure and of air outlet for vacuum (both operated by port l_{ab}) along the whole length of the chamber, it can be reasonably excluded that said additional air ports l_a could serve in any way as improvement for pressure distribution into the chamber in the sense of favoring the powder flow, i.e. favoring the suction and delivery of the powders entering and leaving the chamber through the input valve and the output valve respectively. Rather, it is applicant's opinion that the function of said inlet holes l_a is to carry out cleaning of the chamber 6 when powder to be conveyed is not present therein.

In any case, like the above discussed embodiment of Fig. 2, there is no outlet hole destined to communicate only with the vacuum source 13 (in view of the central air port l_{ab} being able to be connected both to vacuum source 13 and to pressure source 14) and the hole that can be connected to the vacuum source 13 (thus acting as an outlet hole) is the centrally arranged air port l_{ab}, i.e. located far from the output valve of the chamber. Therefore, for the same reasons set forth on the embodiment of Fig. 2,

even the embodiment of Fig. 6 of Ogawa appears unable to anticipate or suggest the present invention as claimed in claim 1, as currently amended.

In particular, it is applicant's opinion that, even starting from the arrangement of Fig. 6 of Ogawa (the only one that is provided with two non-central ports), the skilled person would be in the presence of a symmetrical arrangement schematically characterized by "inlet" (upstream port l_a), "inlet/outlet" (port l_{ab}) and "inlet" (downstream port l_a) sequence and, therefore, could not find any suggestion in order to devise a tubular chamber wherein the inlet hole and the outlet hole are axially offset, so as to have the inlet hole 16 located in proximity of the input valve 14 (i.e. on the opposite side of outlet 13) and the outlet hole 17 located in proximity of the output valve 15 (i.e. on the opposite side of inlet 12), thereby improving and optimizing suction and delivery of powders through the chamber.

In fact, starting from the above mentioned arrangement of Fig. 6 of Ogawa, the device according to the claimed invention would have been obtained by:

a) keeping the upstream port l_a in the same position, with its connection to the pressure source;

b) eliminating the central port l_{ab}; and

c) keeping the downstream port l_a in the same position, but connecting it to the vacuum source instead of to the pressure source.

Alternatively, the device according to the claimed invention could have been obtained by:

a) keeping the upstream port l_a in the same position, with its connection to the pressure source;

b_1) moving the central port l_{ab} from the center of the chamber downstream to the proximity of the chamber outlet and making it connected only to the vacuum source; and

c_1) eliminating the downstream port l_a originally connected to the vacuum source.

It is submitted that such modifications to the Ogawa's apparatus are not obvious and actually involve the requested inventive step.

Evans (U.S. Pat. No. 3,836,288) discloses a conveyor system utilized to feed granular or powdered plastic materials to molding machines in plastic molding plants. However, Evans does not explain how the granular or powdered material is actually fed, but it merely relates to the device used to create the pressure and vacuum destined to the material feeding circuit.

Substantially, this device includes a blower 41 connected to a pair of valve units 46, 47 which, depending on the specific configuration they assume, enable either suction of air from, or introduction of air into the conduit 37 connected to the

material conveyor circuit. In other words, only the pressure/vacuum generator is disclosed by Evans, but no words or drawings explain how such generator is connected to the material feeding circuit. One could even presume that a tubular pumping chamber is arranged along the material feeding circuit, but no mention is absolutely made in Evans of the connection of such pumping chamber to the pressure/vacuum generator and, more specifically, how many pressure/vacuum ports are arranged in the chamber and where they are located. However, as both pressure and vacuum utilize the same conduit 37, it is reasonable that the air port or ports of the pumping chamber are designed to be connected with both the pressure and vacuum source, depending on whether pressure or vacuum is present in the conduit 37.

For certain, no teaching or suggestion is made in Evans as to provide the material conveyor circuit with a tubular pumping chamber characterized by two axially spaced inlet and outlet holes, one destined to be connected only to the pressure source and the other destined to be connected only to the vacuum source, as claimed in claim 1 of the present application.

Vogt (U.S. Pat. No. 3,260,285) does not relate to a pumping device for feeding powders along a feeding circuit, but discloses an apparatus for filling containers with powders by gravity (cf. column 5, lines 30-33). Throttling, pressure-operated flow

control valves 12, 15 are arranged upstream and downstream of the filling chamber 14 to open or close the communications of the chamber 14 with the material supply hopper 10 and with the container 16. A vacuum/pressure system is connected to the filling chamber 14 through valve 47 in order to increase compaction of the pulverulent material in the chamber (see column 5, lines 59-75).

Therefore, it is to be noted that, differently from the apparatus according to the present invention, the vacuum/pressure arrangements present in Vogt do not have the function and the capability to suck and deliver the powder (and, in fact, the filling of containers with powder takes place by gravity), but they are merely connected and used to obtain the desired compaction of the powder in the chamber. In any case, even the structure of the chamber is fully different, as only one air port 45 is present in the chamber 14 to provide communication with vacuum and pressure sources. In this connection, it should be noted that the Examiner's assertion that in Vogt the vacuum and pressure sources 48, 49 are axially distanced (paragraph 6 of the Office Action) is incorrect, because it is clearly shown in Fig. 1 of Vogt that both the pressure source 48 and the vacuum source 49 communicate with the chamber 14 through valve 47 and the common pipe 45 (see also column 4, lines 66-67).

In view of the above, it is submitted that there is not any useful teaching or suggestion in Vogt as to devise a tubular pumping chamber with two axially spaced

inlet and outlet holes, one destined to be connected only to the pressure source and the other destined to be connected only to the vacuum source, as required by claim 1 of the present application.

Holzenberger (U.S. Pat. No. 4,154,484) does not appear relevant to the claimed invention, as it relates to an apparatus for transporting solid particles from an underground excavation to a level above the ground along pipes wherein water flow is circulated. In practice, pairs of parallel pipes are present, with inlet and outlet valves which alternately allow the water and solid particles to flow into one or the other pipe of the pair.

Based on the foregoing amendments and remarks, it is respectfully submitted that the claims in the present application, as they now stand, patentably distinguish over the references cited and applied by the Examiner and are, therefore, in condition for allowance. A Notice of Allowance is in order, and such favorable action and reconsideration are respectfully requested.

However, if after reviewing the above amendments and remarks, the Examiner has any questions or comments, he is cordially invited to contact the undersigned attorneys.

Respectfully submitted,

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